

This listing of claims will replace all prior versions, and listings, of claims in the application:

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2 Claim 1 (currently amended): A method of operating a communications system

3 including an edge router, the method comprising:

4 operating said edge router to perform the steps of:

5 generating, in a forwarding table, a MAC address forwarding table entry

6 from a MAC address included in a headers header of a frame received by said edge

7 router;

8 monitoring a ~~communications~~ communications session between a device on

9 a network which uses MAC addresses with a server responsible for assigning IP

10 addresses to detect assignment of an IP address corresponding to a MAC address

11 provided in a data portion of a message from said device; and

12 upon detecting assignment of an IP address corresponding to a MAC

13 address provided in a data portion of said message, creating an entry in an address

14 resolution table associating an assigned IP address with said MAC address provided in

15 the data portion of said message.

1 Claim 2 (original): The method of claim 1, further comprising:

2 discarding IP packets corresponding to IP addresses for which a MAC address

3 included in said address resolution table does not have a corresponding MAC address

4 entry in said MAC address forwarding table.

1 Claim 3 (original): The method of claim 2, wherein Address Resolution Protocol is not

2 used by said edge router.

1 Claim 4 (original): The method of claim 3, further comprising:

2 storing in said address resolution table aging information obtained from

3 monitoring information associated with said IP address assignment.

1 Claim 5 (original): The method of claim 4, further comprising;

2 operating said edge router to monitor for IP address release messages transmitted  
3 from said network to the server responsible for assigning IP addresses; and  
4 deleting, in response to detecting an IP address release message, an entry in said  
5 address forwarding table corresponding to an IP addresses included in said detected IP  
6 address release message.

1 Claim 6 (original): The method of claim 5, further comprising;  
2 operating said edge router to compare a MAC address included in the data portion  
3 of an IP address assignment request message to a MAC address included in the header of  
4 said IP address assignment request message.

1 Claim 7 (currently amended): ~~The method of claim 6, further comprising:~~ A method of  
2 operating a communications system including an edge router that does not use Address  
3 Resolution Protocol, the method comprising:  
4 operating said edge router to perform the steps of:  
5 generating, in a forwarding table, a MAC address forwarding table entry  
6 from a MAC address included in a header of a frame received by said edge router;  
7 monitoring a communications session between a device on a network  
8 which uses MAC addresses with a server responsible for assigning IP addresses to detect  
9 assignment of an IP address corresponding to a MAC address provided in a data portion  
10 of a message from said device;  
11 upon detecting assignment of an IP address corresponding to a MAC  
12 address provided in a data portion of said message, creating an entry in an address  
13 resolution table associating an assigned IP address with said MAC address provided in  
14 the data portion of said message;  
15 discarding IP packets corresponding to IP addresses for which a MAC  
16 address included in said address resolution table does not have a corresponding MAC  
17 address entry in said MAC address forwarding table;  
18 storing in said address resolution table aging information obtained from  
19 monitoring information associated with said IP address assignment;

20 operating said edge router to monitor for IP address release messages  
21 transmitted from said network to the server responsible for assigning IP addresses;  
22 deleting, in response to detecting an IP address release message, an entry  
23 in said address forwarding table corresponding to an IP addresses included in said  
24 detected IP address release message;  
25 operating said edge router to compare a MAC address included in the data  
26 portion of an IP address assignment request message to a MAC address included in the  
27 header of said IP address assignment request message; and  
28 generating a security alert signal in response to detecting a mismatch  
29 between the MAC address included in the data portion of said IP address assignment  
30 request message and said MAC address included in the header of said IP address  
31 assignment request message.

1 Claim 8 (original): The method of claim 1, further comprising:

2 operating the edge router to transmit MAC address information obtained by  
3 accessing a forwarding table included in said edge router in response to a request for  
4 MAC address information corresponding to an IP address assignment request.

1 Claim 9 (currently amended): ~~The method of claim 8, wherein the method further~~  
2 ~~comprises: A method of operating a communications system including an edge router~~  
3 ~~that does not use Address Resolution Protocol, the method comprising:~~

4 operating said edge router to perform the steps of:  
5 generating, in a forwarding table, a MAC address forwarding table entry  
6 from a MAC address included in a header of a frame received by said edge router;  
7 monitoring a communications session between a device on a network  
8 which uses MAC addresses with a server responsible for assigning IP addresses to detect  
9 assignment of an IP address corresponding to a MAC address provided in a data portion  
10 of a message from said device;  
11 upon detecting assignment of an IP address corresponding to a MAC  
12 address provided in a data portion of said message, creating an entry in an address

13 resolution table associating an assigned IP address with said MAC address provided in  
14 the data portion of said message;  
15 operating the edge router to transmit MAC address information obtained  
16 by accessing a forwarding table included in said edge router in response to a request for  
17 MAC address information corresponding to an IP address assignment request; and  
18 operating said server to deny said IP address assignment request when said  
19 MAC address information obtained by accessing said forwarding table indicates a  
20 discrepancy between a MAC address included in the IP address assignment request and  
21 MAC address information included in said forwarding table.

1 Claim 10 (original): The method of claim 9, wherein said MAC address information  
2 obtained by accessing said forwarding table indicates that the MAC address is not  
3 included in the edge router forwarding table.

1 Claim 11 (currently amended): A communication system comprising:  
2 an edge router including:  
3 means for generating, in a forwarding table, a MAC address forwarding  
4 table entry from a MAC address included in a ~~headers~~ header of a frame received by said  
5 edge router;  
6 means for monitoring a ~~communications~~ communications session between a  
7 device on a network which uses MAC addresses with a server responsible for assigning  
8 IP addresses to detect assignment of an IP address corresponding to a MAC address  
9 provided in a data portion of a message from said device; and  
10 means for creating an entry in an address resolution table associating an  
11 assigned IP address with said MAC address provided in the data portion of said message  
12 upon detecting assignment of an IP address corresponding to a MAC address provided in  
13 a data portion of said message.

1 Claim 12 (original): The communication system of claim 11, wherein support for  
2 Address Resolution Protocol is disabled in said edge router.

1 Claim 13 (original): The communication system of claim 12, wherein said edge router  
2 further includes:

3 means for discarding IP packets corresponding to IP addresses for which a MAC  
4 address included in said address resolution table does not have a corresponding MAC  
5 address entry in said MAC address forwarding table.

1 Claim 14 (original): The communications system of claim 13, wherein said edge router  
2 further comprises:

3 an address resolution table including IP address aging information obtained from  
4 monitoring information associated with said IP address assignment.

1 Claim 15 (original): The communications system of claim 14, wherein said edge router  
2 further includes:

3 means for monitoring for IP address release messages transmitted from said  
4 network to the server responsible for assigning IP addresses; and

5 means for deleting, in response to detecting an IP address release message, an  
6 entry in said address forwarding table corresponding to an IP addresses included in said  
7 detected IP address release message.

1 Claim 16 (original): The communications system of claim 15, wherein said edge router  
2 further comprises:

3 means for comparing a MAC address included in the data portion of an IP address  
4 assignment request message to a MAC address included in the header of said IP address  
5 assignment request message.

1 Claim 17 (currently amended): ~~The communications system of claim 16, wherein said~~  
2 ~~edge router further comprises: A communication system comprising:~~

3 an edge router wherein support for Address Resolution Protocol is disabled in said  
4 edge router, said edge router including:

5 means for generating, in a forwarding table, a MAC address forwarding  
6 table entry from a MAC address included in a header of a frame received by said edge  
7 router;

8 means for monitoring a communications session between a device on a  
9 network which uses MAC addresses with a server responsible for assigning IP addresses  
10 to detect assignment of an IP address corresponding to a MAC address provided in a data  
11 portion of a message from said device;

12 means for creating an entry in an address resolution table associating an  
13 assigned IP address with said MAC address provided in the data portion of said message  
14 upon detecting assignment of an IP address corresponding to a MAC address provided in  
15 a data portion of said message;

16 means for discarding IP packets corresponding to IP addresses for which a  
17 MAC address included in said address resolution table does not have a corresponding  
18 MAC address entry in said MAC address forwarding table;

19 an address resolution table including IP address aging information  
20 obtained from monitoring information associated with said IP address assignment;

21 means for monitoring for IP address release messages transmitted from  
22 said network to the server responsible for assigning IP addresses;

23 means for deleting, in response to detecting an IP address release message,  
24 an entry in said address forwarding table corresponding to an IP addresses included in  
25 said detected IP address release message;

26 means for comparing a MAC address included in the data portion of an IP  
27 address assignment request message to a MAC address included in the header of said IP  
28 address assignment request message; and

29 means for generating a security alert signal in response to detecting a  
30 mismatch between the MAC address included in the data portion of said IP address  
31 assignment request message and said MAC address included in the header of said IP  
32 address assignment request message.

1 Claim 18 (original): The communications system of claim 17, further comprising:

2 means for transmitting MAC address information obtained by accessing a  
3 forwarding table included in said edge router to said server in response to a request for  
4 MAC address information corresponding to an IP address assignment request.

1 Claim 19 (original): The communications system of claim 18, wherein said MAC  
2 address information indicates whether or not a MAC address included in said IP address  
3 assignment request is present in a layer 2 forwarding table included in said edge router.

Claim 20 (currently amended): A machine-readable medium, comprising a set of  
machine-readable instructions for controlling a machine to perform the steps of:

generating, in a forwarding table, a MAC address forwarding table entry from  
a MAC address included in a ~~headers~~ header of a frame received by said edge router;

monitoring a ~~communications~~ communications session between a device on a  
network which uses MAC addresses with a server responsible for assigning IP  
addresses to detect assignment of an IP address corresponding to a MAC address  
provided in a data portion of a message from said device; and

upon detecting assignment of an IP address corresponding to a MAC address  
provided in a data portion of said message, creating an entry in an address resolution  
table associating an assigned IP address with said MAC address provided in the data  
portion of said message.